09567863

09/976,980 -

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*** YOU HAVE NEW MAIL ***

=> s (nanoparticle? or nanosphere? or nanostructure? or nanomaterial?) and oligonucleotide?
L1 1939 (NANOPARTICLE? OR NANOSPHERE? OR NANOSTRUCTURE? OR NANOMATERIAL?) AND OLIGONUCLEOTIDE?

=> s l1 and electrode?
L2 235 L1 AND ELECTRODE?

=> s l2 and conductivity
L3 97 L2 AND CONDUCTIVITY

=> s l3 and hybridization
L4 71 L3 AND HYBRIDIZATION

=> s l4 and target?
L5 65 L4 AND TARGET?

=> s l5 and (substrate? or support? or surface?)
4 FILES SEARCHED...
L6 64 L5 AND (SUBSTRATE? OR SUPPORT? OR SURFACE?)

=> d l6 bib abs 1-64

L6 ANSWER 1 OF 64 MEDLINE
AN 2002124178 MEDLINE
DN 21848517 PubMed ID: 11859188
TI Array-based electrical detection of DNA with **nanoparticle** probes.
CM Comment in: Science. 2002 Feb 22;295(5559):1447
AU Park So-Jung; Taton T Andrew; Mirkin Chad A
CS Department of Chemistry and Institute for Nanotechnology, Northwestern University, Evanston, IL 60208, USA.
SO SCIENCE, (2002 Feb 22) 295 (5559) 1503-6.

09567863

Journal code: 0404511. ISSN: 1095-9203.
CY United States
DT (EVALUATION STUDIES)
Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200203
ED Entered STN: 20020223
Last Updated on STN: 20020308
Entered Medline: 20020307
AB A DNA array detection method is reported in which the binding of **oligonucleotides** functionalized with gold **nanoparticles** leads to **conductivity** changes associated with **target** -probe binding events. The binding events localize gold **nanoparticles** in an **electrode** gap; silver deposition facilitated by these **nanoparticles** bridges the gap and leads to readily measurable **conductivity** changes. An unusual salt concentration-dependent **hybridization** behavior associated with these **nanoparticle** probes was exploited to achieve selectivity without a thermal-stringency wash. Using this method, we have detected **target** DNA at concentrations as low as 500 femtomolar with a point mutation selectivity factor of approximately 100,000:1.

L6 ANSWER 2 OF 64 CAPLUS COPYRIGHT 2003 ACS
AN 2002:172145 CAPLUS
DN 136:227890
TI **Nanoparticles** having **oligonucleotides** attached for detection of nucleic acids
IN Mirkin, Chad A.; Letsinger, Robert L.; Mucic, Robert C.; Storhoff, James J.; Elghanian, Robert; Taton, Thomas Andrew; Garimella, Viswanadham; Li, Zhi; Park, So-jung
PA Nanosphere Inc., USA
SO PCT Int. Appl., 412 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 15

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002018643	A2	20020307	WO 2001-US25237	20010810
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	US 2002155442	A1	20021024	US 2001-760500	20010112
	US 2003022169	A1	20030130	US 2001-820279	20010328
	AU 2001081248	A5	20020313	AU 2001-81248	20010810
PRAI	US 2000-224631P	P	20000811		
	US 2000-254392P	P	20001208		
	US 2000-255235P	P	20001211		
	US 2001-760500	A	20010112		
	US 2001-820279	A	20010328		
	US 1996-31809P	P	19960729		
	WO 1997-US12783	A2	19970721		
	US 1999-240755	B2	19990129		
	US 1999-344667	A2	19990625		
	US 2000-176409P	P	20000113		

US 2000-192699P P 20000328
US 2000-200161P P 20000426
US 2000-213906P P 20000626
WO 2001-US25237 W 20010810

AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having **oligonucleotides** attached thereto. In one embodiment of the method, the **oligonucleotides** are attached to **nanoparticles** and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the **hybridization** of the **oligonucleotides** on the **nanoparticles** to the nucleic acid. The invention also provides compns. and kits comprising particles. The invention further provides methods of synthesizing unique **nanoparticle-oligonucleotide** conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addn., the invention provides **nanomaterials** and **nanostructures** comprising **nanoparticles** and methods of nanofabrication utilizing **nanoparticles**. Finally, the invention provides a method of sepg. a selected nucleic acid from other nucleic acids.

L6 ANSWER 3 OF 64 WPIDS (C) 2003 THOMSON DERWENT
AN 2002-258024 [30] WPIDS
CR 1998-145263 [13]; 2001-061976 [07]; 2001-451868 [48]; 2001-656926 [75]; 2002-608256 [65]; 2003-092900 [08]; 2003-174167 [17]; 2003-182627 [18]; 2003-198491 [19]; 2003-228114 [22]; 2003-228115 [22]; 2003-237646 [23]; 2003-247253 [24]
DNC C2002-076817
TI Detecting nucleic acid, useful for diagnosis of genetic, viral or bacterial disease, comprises hybridizing **nanoparticles** with attached **oligonucleotides** to nucleic acid and detecting change brought about by **hybridization**.
DC B04 D16
IN ELGHANIAN, R; GARIMELLA, V; LETSINGER, R L; LI, Z; MIRKIN, C A; MUCIC, R C; PARK, S; STORHOFF, J J; TATON, T A
PA (NANO-N) NANOSPHERE INC
CYC 95
PI WO 2002018643 A2 20020307 (200230)* EN 329p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
AU 2001081248 A 20020313 (200249)
ADT WO 2002018643 A2 WO 2001-US25237 20010810; AU 2001081248 A AU 2001-81248 20010810
FDT AU 2001081248 A Based on WO 200218643
PRAI US 2001-820279 20010328; US 2000-224631P 20000811; US 2000-254392P 20001208; US 2000-255235P 20001211; US 2001-760500 20010112
AN 2002-258024 [30] WPIDS
CR 1998-145263 [13]; 2001-061976 [07]; 2001-451868 [48]; 2001-656926 [75]; 2002-608256 [65]; 2003-092900 [08]; 2003-174167 [17]; 2003-182627 [18]; 2003-198491 [19]; 2003-228114 [22]; 2003-228115 [22]; 2003-237646 [23]; 2003-247253 [24]
AB WO 200218643 A UPAB: 20030410
NOVELTY - Detecting a nucleic acid (NA) having at least 2 portions comprising:
(a) providing **nanoparticles** (NP) with attached **oligonucleotides** (OGN), where OGN has a sequence complementary to the sequence of NA;
(b) contacting NA and NP under conditions effective to allow

hybridization of OGN with NA; and

(c) observing a detectable change brought about by **hybridization** of OGN with NA, is new.

DETAILED DESCRIPTION - Detecting (M1) a nucleic acid (NA) having at least 2 portions comprising:

(a) providing 2 types of **nanoparticles** (NP) with attached **oligonucleotides** (OGN), where OGN on type 1 has a sequence complementary to a first portion of the sequence of NA and OGN on type 2 has a sequence complementary to a second portion of the sequence of NA;

(b) contacting NA and NP under conditions effective to allow **hybridization** of OGN with NA; and

(c) observing a detectable change brought about by **hybridization** of OGN with NA, is new.

INDEPENDENT CLAIMS are also included for the following:

(1) a kit for carrying out M1;

(2) an aggregate probe comprising at least 2 types of NP having OGN attached, bound to each other as a result of **hybridization** of OGN and OGN comprises sequence complementary to a portion of NA or a hydrophobic group attached to the NP free end;

(3) a core probe comprising at least 2 types of NP having OGN attached, bound to each other as a result of **hybridization** of OGN;

(4) a **substrate** having NP attached;

(5) a metallic or semiconductor NP having OGN attached, where OGN are labeled with fluorescent molecules at NP free ends;

(6) a satellite probe comprising a particle having OGN attached and probe OGN hybridized to OGN on NP;

(7) a method (M2) of nanofabrication comprising:

(a) providing a linking OGN having a selected sequence of 2 portions;

(b) providing NP having OGN attached, where OGN comprises a sequence complementary to the linking OGN; and

(c) contacting linking OGN and NP under **hybridization** conditions so that a desired **nanomaterial** or **nanostructure** is formed where NP are held together by OGN connectors;

(8) **nanomaterials** or **nanostructures** composed of NP having OGN attached, where NP are held together by OGN connectors;

(9) an assembly of containers comprising containers holding NP with OGN attached;

(10) a NP having a number of different OGN attached;

(11) separating (M3) a selected NA having 2 portions;

(12) binding (M4) OGN to charged NP to produce stable NP-OGN conjugates;

(13) NP-OGN conjugates comprising OGN attached to NP at a **surface** density sufficient so that the conjugates are stable, where OGN has sequence complementary to a NA or another OGN;

(14) detecting a NA using the NP-OGN conjugates;

(15) a method of nanofabrication using the NP-OGN conjugates;

(16) separating a selected NA using the NP-OGN conjugates;

(17) NP-OGN conjugates which are NP having OGN attached, where OGN have a covalently bound cyclic disulfide functional group or polythiol functional group that can bind to NP;

(18) OGN having a covalently bound cyclic disulfide functional group or polythiol functional group that can bind NP; and

(19) detecting (M5) an analyte in a sample.

USE - The methods are useful for detecting a nucleic acid, separating a selected nucleic acid from others and methods of nanofabrication (all claimed). Detecting analytes such as nucleic acids and proteins are useful for the diagnosis of genetic, bacterial and viral diseases.

ADVANTAGE - The OGN-NP conjugates that use cyclic disulfide linkers improve the sensitivity of diagnostic assays. In particular assays using OGN-NP conjugates prepared using linkers comprising a steroid residue

attached to a cyclic disulfide have been found to be approx. 10 times more sensitive than assays employing conjugates prepared using alkanethiols or acyclic disulfides as the linker. The OGN-NP conjugates are stable allowing them to be used directly in PCR solutions. Therefore conjugates added as probes to a DNA target to be PCR amplified can be carried through the 30 or 40 heating cooling cycles of the PCR and are still able to detect the amplicons without opening the tubes. Opening the tubes for addition of probes after PCR can cause serious problems through contamination of the equipment to be used for subsequent tests.
Dwg.0/64

L6 ANSWER 4 OF 64 WPIDS (C) 2003 THOMSON DERWENT
AN 2001-061976 [07] WPIDS
CR 1998-145263 [13]; 2001-451868 [48]; 2001-656926 [75]; 2002-258024 [30]; 2002-608256 [65]; 2003-092900 [08]; 2003-174167 [17]; 2003-182627 [18]; 2003-198491 [19]; 2003-228114 [22]; 2003-228115 [22]; 2003-237646 [23]; 2003-247253 [24]
DNC C2001-017349
TI Detecting nucleic acid, useful for e.g. diagnosis of diseases, forensics and DNA sequencing, comprises observing detectable change brought about by **hybridization** of nucleic acid with **substrate** or particle bound **oligonucleotides**.
DC B04 D16
IN ELGHANIAN, R; LETSINGER, R L; MIRKIN, C A; MUCIC, R C; STORHOFF, J J; TATON, T A
PA (ELGH-I) ELGHANIAN R; (LETS-I) LETSINGER R L; (MIRK-I) MIRKIN C A; (MUCI-I) MUCIC R C; (STOR-I) STORHOFF J J; (TATO-I) TATON T A
CYC 94
PI WO 2001000876 A1 20010104 (200107)* EN 139p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
AU 2000056378 A 20010131 (200124)
EP 1198591 A1 20020424 (200235) EN
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI
JP 2003503699 W 20030128 (200309) 232p
ADT WO 2001000876 A1 WO 2000-US17507 20000626; AU 2000056378 A AU 2000-56378 20000626; EP 1198591 A1 EP 2000-941713 20000626, WO 2000-US17507 20000626; JP 2003503699 W WO 2000-US17507 20000626, JP 2001-506866 20000626
FDT AU 2000056378 A Based on WO 200100876; EP 1198591 A1 Based on WO 200100876; JP 2003503699 W Based on WO 200100876
PRAI US 2000-200161P 20000426; US 1999-344667 19990625
AN 2001-061976 [07] WPIDS
CR 1998-145263 [13]; 2001-451868 [48]; 2001-656926 [75]; 2002-258024 [30]; 2002-608256 [65]; 2003-092900 [08]; 2003-174167 [17]; 2003-182627 [18]; 2003-198491 [19]; 2003-228114 [22]; 2003-228115 [22]; 2003-237646 [23]; 2003-247253 [24]
AB WO 200100876 A UPAB: 20030410
NOVELTY - Detecting a nucleic acid with at least 2 portions (NA) comprising hybridizing the NA with **oligonucleotides** attached to a **substrate** and/or particle and detecting a change in color, **conductivity** or optical density, is new.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:
(1) an aggregate probe (I) containing at least 2 types of containing at least 2 types of NP with attached ON that have a sequence complementary to a portion of the NA sequence;
(2) an aggregate probe (II) containing at least 2 types of containing

at least 2 types of NP with attached ON that have a hydrophobic group attached to the end;

(3) a core probe (III) containing at least 2 types of NP with attached ON, where the NP are bound together as a result of the **hybridization** of the ON attached to them;

(4) detecting (M1) NA comprising:

(a) hybridizing NA with a **substrate** attached to ON located between a pair of **electrodes**, which have a sequence complementary to portion 1 of the NA;

(b) hybridizing the **substrate** bound NA with an aggregate probe which contains **nanoparticles** (NP) that conduct electricity and have at least one of the types of ON attached that have a sequence complementary to portion 2; and

(c) detecting a change in **conductivity**;

(5) detecting (M2) NA comprising:

(a) hybridizing

(i) a **substrate** attached to ON;

(ii) (I) or (II) containing at least 2 types of NP with attached ON that have a sequence complementary to portion 1 of the NA; and

(iii) a type of NP having at least 2 types of attached ON where the first has a sequence complementary to portion 2 of the NA and the second type has a sequence complementary to a portion of the ON sequence attached to the **substrate**; and

(b) observing a detectable change;

(6) detecting (M3) NA comprising:

(a) hybridizing NA with a **substrate** attached to ON;

(b) hybridizing the **substrate** bound NA with liposomes (LP) with attached ON having a sequence complementary to a portion of the NA sequence;

(c) hybridizing the LP bound to **substrate** with (II); and

(d) observing detectable change;

(7) detecting (M4) NA comprising:

(a) hybridizing:

(i) a **substrate** attached to ON;

(ii) (III) containing at least 2 types of NP with attached ON that have a sequence complementary to portion 1 of the NA; and

(iii) a type of linking **oligonucleotide** containing a sequence complementary to portion 2 of NA and a sequence complementary to a portion of the ON sequence attached to the NP of (III); and

(b) observing a detectable change;

(8) binding (M5) ON to charged NP to produce stable NP-ON conjugates which have ON at a **surface** density of at least 10 picomoles/cm2 on the NP **surface** comprising:

(a) providing ON covalently bound to a moiety containing a functional group which can bind to the NP;

(b) contacting the ON and the NP in salt water where the ionic strength is sufficient to partially overcome the electrostatic attraction or repulsion of the ON for each other or for the NP; and

(c) allow sufficient ON to bind to the NP to produce the NP-ON conjugates;

(9) NP-ON conjugates (IV) which have ON at a surface density of at least 10 picomoles/cm2 on the NP surface;

(10) detecting (M6) NA comprising:

(a) hybridizing NA with at least 1 type of (IV) having the first type with a sequence complementary to portion 1 of NA and the second type having a sequence complementary to portion 2 of NA; and

(b) observing a detectable change brought about by the hybridization of the ON on the NP with NA;

(11) detecting (M7) NA comprising:

(a) hybridizing substrate bound NA with (IV) having a sequence complementary to portion 2 of NA; and

(b) observing a detectable change;

(12) detecting (M8) NA on a substrate comprising detecting the presence and/or quantity of NA with an optical scanner;

(13) nanofabrication (M9) comprising hybridizing at least one type of linking ON having at least 2 portions and one or more types of (IV) having a sequence complementary to a portion of a linking ON, to produce a nanomaterial or nanostructure where the NP of (IV) are held together by ON connectors;

(14) nanofabrication (M10.) comprising hybridizing 2 types of (IV) where the ON of the first type of (IV) have a sequence complementary to the ON of the second type of (IV), to produce a nanomaterial of nanostructure;

(15) nanomaterials or nanostructures (V) composed of (IV) held together by ON connectors;

(16) separating a selected NA having at least 2 portions from other NA comprising hybridizing NA with 2 or more types of (IV) where the ON of (IV) have a sequence complementary to a portion of the selected NA, so that (IV) hybridized with the selected NA aggregate and precipitate; and

(17) kits for detecting nucleic acids.

USE - The new methods are useful for detecting nucleic acids, such as, for the diagnosis and/or monitoring of diseases (e.g. viral diseases, bacterial diseases, sexually transmitted diseases, inherited disorders and cancers), in forensics, in DNA sequencing, for paternity testing, for cell line authentication and for monitoring gene therapy.

ADVANTAGE - Detecting nucleic acids based upon observing a color change, e.g. with the naked eye, is cheap, fast, simple, robust as the reagents are stable, do not require specialized or expensive equipment, and little or no instrumentation is required. The nanoparticle oligonucleotide conjugates remain stable for at least 6 months. They are also highly selective and specific as the temperature range over which they form is quite narrow. A single base mismatch and as little as 20 femtomoles (fM) of target can be detected using the conjugates. This points towards a potential method for detecting oligonucleotide targets without the need for target amplification schemes such as polymerase chain reaction.

To evaluate the effectiveness of nanoparticles as colorimetric indicators for oligonucleotide arrays, test chips were probed with a synthetic target and labeled with both fluorophore and nanoparticle indicators. Arrays challenged with the model target and nanoparticle labeled probes and stained with a silver amplification solution showed highly selective hybridization to complementary array elements. Redundant spots of the same capture sequence showed reproducible and consistent hybridization signal. No background adsorption by nanoparticles or silver stain was observed. The darker spots corresponding to adenine at position 8 indicate that oligonucleotide target hybridized preferentially to perfectly complementary capture strands over mismatched ones by a more than 3:1 ratio. In comparison, fluorophore labels only provided 2:1 selectivity for adenine at position 8. Nanoparticle labeled probes were significantly more sensitive than those using fluorophore labeled probes. Hybridization signal could be resolved at target concentrations as low as 50 fM in comparison to Cy3/Cy5 fluorophore labeled arrays for which 1 pM or greater target concentrations are required.

Dwg.0/44

L6 ANSWER 5 OF 64 USPATFULL

AN 2003:127065 USPATFULL

TI Means and methods for detection of binding of members of specific binding pairs

IN Fritzsche, Wolfgang, Jena, GERMANY, FEDERAL REPUBLIC OF
Czaki, Andrea, Camburg, GERMANY, FEDERAL REPUBLIC OF
Koehler, Johann Michael, Golmsdorf, GERMANY, FEDERAL REPUBLIC OF
Moeller, Robert, Jena, GERMANY, FEDERAL REPUBLIC OF
Schut, Frederik, Den Haag, NETHERLANDS

09567863

Oosting, Louis, Groningen, NETHERLANDS
Tan, Paris Som Tjwan, Haren, NETHERLANDS
PI US 2003087277 A1 20030508
AI US 2002-215789 A1 20020809 (10)
RLI Continuation-in-part of Ser. No. US 2001-869206, filed on 25 Jun 2001, PENDING A 371 of International Ser. No. WO 1999-EP10334, filed on 22 Dec 1999, UNKNOWN
PRAI DE 1998-19860547 19981223
DT Utility
FS APPLICATION
LREP JORDAN AND HAMBURG LLP, 122 EAST 42ND STREET, SUITE 4000, NEW YORK, NY, 10168
CLMN Number of Claims: 21
ECL Exemplary Claim: 1
DRWN 9 Drawing Page(s)
LN.CNT 1280
AB The present invention relates to an affinity sensor and methods suitable for use in an affinity sensor for detecting specific molecular binding events, as is particularly used in the molecular biological field, for example, in the medical diagnostics, in the biosensor technology or in the DNA-microarray technology, and application of the same. A method for detecting binding of members of a specific binding pair of the invention comprises providing a first member of said binding pair coupled to a deposition nucleus and specifically binding said first member to a **surface**-immobilized second member of said pair and determining the electrical resistance of said **surface**, the method characterized in that after binding of the members on said **surface** an electrically conductive deposit is formed on said **surface** under conditions that allow said deposit to be formed specifically on said nucleus or deposit formed.

L6 ANSWER 6 OF 64 USPATFULL
AN 2003:127030 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Taton, Thomas Andrew, Little Canada, MN, UNITED STATES
Lu, Gang, Mt Prospect, IL, UNITED STATES
PI US 2003087242 A1 20030508
AI US 2001-8978 A1 20011207 (10)
RLI Continuation-in-part of Ser. No. US 2001-927777, filed on 10 Aug 2001, PENDING Continuation-in-part of Ser. No. US 2001-820279, filed on 28 Mar 2001, PENDING Continuation-in-part of Ser. No. US 2001-760500, filed on 12 Jan 2001, PENDING Continuation-in-part of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-176409P 20000113 (60)
US 2000-192699P 20000328 (60)
US 2000-200161P 20000426 (60)
US 2000-213906P 20000626 (60)
US 2000-224631P 20000811 (60)
US 2000-254392P 20001208 (60)
US 2000-254418P 20001208 (60)
US 2000-255235P 20001211 (60)
US 2000-255236P 20001211 (60)
US 2001-282640P 20010409 (60)
DT Utility

09567863

FS APPLICATION
LREP MCDONNELL BOEHNEN HULBERT & BERGHOFF, 300 SOUTH WACKER DRIVE, SUITE 3200, CHICAGO, IL, 60606
CLMN Number of Claims: 626
ECL Exemplary Claim: 1
DRWN 71 Drawing Page(s)
LN.CNT 12308
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

L6 ANSWER 7 OF 64 USPATFULL
AN 2003:119959 USPATFULL
TI Molehole embedded 3-D crossbar architecture used in electrochemical molecular memory device
IN Kuhr, Werner G., Oak Hills, CA, UNITED STATES
Bocian, David F., Riverside, CA, UNITED STATES
Liu, Zhiming, Riverside, CA, UNITED STATES
Yasseri, Amir, Riverside, CA, UNITED STATES
PA The Regents of the University of California (U.S. corporation)
PI US 2003082444 A1 20030501
AI US 2001-46499 A1 20011026 (10)
DT Utility
FS APPLICATION
LREP QUINE INTELLECTUAL PROPERTY LAW GROUP, P.C., P O BOX 458, ALAMEDA, CA, 94501
CLMN Number of Claims: 117
ECL Exemplary Claim: 1
DRWN 6 Drawing Page(s)
LN.CNT 1926
AB This invention provides a new design and fabrication for a three-dimensional crossbar architecture embedding a sub-micron or nanometer sized hole (called a molehole) in each cross-region. Each molehole is an electrochemical cell consisting of two or more sectional **surfaces** separated by a non-conductor (e.g. a dialectric layer and solid electrolyte). When used in electrochemical molecular memory device (EMMD), the architecture provides unique features such as a nano-scale electroactive **surface**, no interaction between memory elements, and easier miniaturization and integration.

L6 ANSWER 8 OF 64 USPATFULL
AN 2003:119753 USPATFULL
TI Matrices for drug delivery and methods for making and using the same
IN Babich, John W., North Scituate, MA, UNITED STATES
Zubieta, Jon, Syracuse, NY, UNITED STATES
Bonavia, Grant, Kensington, MD, UNITED STATES
PI US 2003082238 A1 20030501
AI US 2002-77475 A1 20020215 (10)

09567863

RLI Continuation of Ser. No. US 2000-503438, filed on 14 Feb 2000, GRANTED, Pat. No. US 6395299
PRAI US 1999-119828P 19990212 (60)
DT Utility
FS APPLICATION
LREP FOLEY, HOAG & ELIOT, LLP, PATENT GROUP, ONE POST OFFICE SQUARE, BOSTON, MA, 02109
CLMN Number of Claims: 138
ECL Exemplary Claim: 1
DRWN 13 Drawing Page(s)
LN.CNT 4259
AB In one aspect, biocompatible matrices such as sol-gels encapsulating a reaction center may be administered to a subject for conversion of prodrugs into biologically active agents. In certain embodiments, the biocompatible matrices of the present invention are sol-gels. In one embodiment, the enzyme L-amino acid decarboxylase is encapsulated and implanted in the brain to convert L-dopa to dopamine for treatment of Parkinson's disease.

L6 ANSWER 9 OF 64 USPATFULL
AN 2003:118982 USPATFULL
TI Formation of self-assembled monolayers of redox sams on silicon for molecular memory applications
IN Bocian, David F., Riverside, CA, UNITED STATES
Kuhr, Werner G., Oak Hills, CA, UNITED STATES
Lindsey, Jonathan S., Raleigh, NC, UNITED STATES
Dabke, Rajeeve B., UNITED STATES
Liu, Zhiming, Riverside, CA, UNITED STATES
PA The Regents of the University of California (U.S. corporation)
PI US 2003081463 A1 20030501
AI US 2001-40059 A1 20011026 (10)
DT Utility
FS APPLICATION
LREP QUINE INTELLECTUAL PROPERTY LAW GROUP, P.C., P O BOX 458, ALAMEDA, CA, 94501
CLMN Number of Claims: 98
ECL Exemplary Claim: 1
DRWN 7 Drawing Page(s)
LN.CNT 1954
AB This invention provides a new method of forming a self-assembling monolayer (SAM) of alcohol-terminated or thiol-terminated organic molecules (e.g. ferrocenes, porphyrins, etc.) on a silicon or other group IV element **surface**. The assembly is based on the formation of an E--O-- or an E--S-- bond where E is the group IV element (e.g. Si, Ge, etc.). The procedure has been successfully used on both P- and n-type group IV element **surfaces**. The assemblies are stable under ambient conditions and can be exposed to repeated electrochemical cycling.

L6 ANSWER 10 OF 64 USPATFULL
AN 2003:99517 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas A., Little Canada, MN, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2003068622 A1 20030410

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AI US 2001-976863 A1 20011012 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility
FS APPLICATION
LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S. Wacker Drive, Chicago, IL, 60606
CLMN Number of Claims: 431
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 8059
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 11 OF 64 USPATFULL
AN 2003:89469 USPATFULL
TI Detection of **target** analytes using particles and **electrodes**
IN Bamdad, Cynthia C., Sharon, MA, United States
Mucic, Robert C., Glendale, CA, United States
PA Clinical Micro Sensors, Inc., Pasadena, CA, United States (U.S. corporation)
PI US 6541617 B1 20030401
AI US 1999-428155 19991027 (9)
PRAI US 1998-105875P 19981027 (60)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Whisenant, Ethan; Assistant Examiner: Lu, Frank
LREP Trecartin, Richard F., Silva, Robin M., Flehr Hohbach Test Albritton & Herbert LLP
CLMN Number of Claims: 13
ECL Exemplary Claim: 1
DRWN 23 Drawing Figure(s); 10 Drawing Page(s)
LN.CNT 4026
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention relates to the use of particles comprising binding ligands and electron transfer moieties (ETMs). Upon binding of a **target** analyte, a particle and a reporter composition are associated and transported to an **electrode surface**. The ETMs are then detected, allowing the presence or absence of the **target** analyte to be determined.

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CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 12 OF 64 USPATFULL
AN 2003:86323 USPATFULL
TI Methods for electronic synthesis of complex structures
IN Heller, Michael J., Encinitas, CA, UNITED STATES
Tu, Eugene, San Diego, CA, UNITED STATES
PA Nanogen, Inc., San Diego, CA (U.S. corporation)
PI US 2003059929 A1 20030327
AI US 2001-912014 A1 20010724 (9)
RLI Continuation of Ser. No. US 2000-490965, filed on 24 Jan 2000, PENDING Continuation of Ser. No. US 1994-271882, filed on 7 Jul 1994, GRANTED, Pat. No. US 6017696 Continuation-in-part of Ser. No. US 1993-146504, filed on 1 Nov 1993, GRANTED, Pat. No. US 5605662
DT Utility
FS APPLICATION
LREP LYON & LYON LLP, 633 WEST FIFTH STREET, SUITE 4700, LOS ANGELES, CA, 90071
CLMN Number of Claims: 94
ECL Exemplary Claim: 1
DRWN 20 Drawing Page(s)
LN.CNT 3361
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A self-addressable, self-assembling microelectronic device is designed and fabricated to actively carry out and control multi-step and multiplex molecular biological reactions in microscopic formats. These reactions include nucleic acid hybridizations, antibody/antigen reactions, diagnostics, and biopolymer synthesis. The device can be fabricated using both microlithographic and micro-machining techniques. The device can electronically control the transport and attachment of specific binding entities to specific micro-locations. The specific binding entities include molecular biological molecules such as nucleic acids and polypeptides. The device can subsequently control the transport and reaction of analytes or reactants at the addressed specific micro-locations. The device is able to concentrate analytes and reactants, remove non-specifically bound molecules, provide stringency control for DNA **hybridization** reactions, and improve the detection of analytes. The device can be electronically replicated.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 13 OF 64 USPATFULL
AN 2003:86172 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas A., Little Canada, MN, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2003059777 A1 20030327
AI US 2001-957313 A1 20010920 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility

09567863

FS APPLICATION
LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S. Wacker Drive, Chicago, IL, 60606
CLMN Number of Claims: 431
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 8060
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 14 OF 64 USPATFULL
AN 2003:78438 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas A., Little Canada, MN, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2003054358 A1 20030320
AI US 2001-975376 A1 20011011 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility
FS APPLICATION
LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S. Wacker Drive, Chicago, IL, 60606
CLMN Number of Claims: 431
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 8059
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits

comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 15 OF 64 USPATFULL
AN 2003:71346 USPATFULL
TI **Nanoparticles** having **oligonucleotides** attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas A., Little Canada, MN, UNITED STATES
PA Nanosphere, Inc.
PI US 2003049631 A1 20030313
AI US 2001-974500 A1 20011010 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility
FS APPLICATION
LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S. Wacker Drive, Chicago, IL, 60606
CLMN Number of Claims: 172
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 6565
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise (contacting the nucleic acid with one or more types of particles having **oligonucleotides** attached thereto, In one embodiment of the method, the **oligonucleotides** are attached to **nanoparticles** and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the **hybridization** of the **oligonucleotides** on the **nanoparticles** to the nucleic acid. The invention also provides compositions and kits comprising particles The invention further provides **nanomaterials** and iianostructures comprising **nanoparticles** and methods of nanofabrication utilizing the **nanoparticles**. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 16 OF 64 USPATFULL
AN 2003:71345 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES

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Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas A., Little Canada, MN, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2003049630 A1 20030313
AI US 2001-957318 A1 20010920 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility
FS APPLICATION
LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S. Wacker Drive, Chicago, IL, 60606
CLMN Number of Claims: 431
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 8041
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 17 OF 64 USPATFULL
AN 2003:64684 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C, Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas A., Little Canada, MN, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2003044805 A1 20030306
AI US 2001-981344 A1 20011015 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility
FS APPLICATION
LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S.

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Wacker Drive, Chicago, IL, 60606
CLMN Number of Claims: 431
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 8061
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 18 OF 64 USPATFULL
AN 2003:40541 USPATFULL
TI Method for enhancing the **hybridization** efficiency of **target** nucleic acids using a self-addressable, self-assembling microelectronic device
IN Sosnowski, Ronald G., Coronado, CA, United States
Butler, William F., Carlsbad, CA, United States
Tu, Eugene, San Diego, CA, United States
Nerenberg, Michael I., San Diego, CA, United States
Heller, Michael J., Encinitas, CA, United States
Edman, Carl F., San Diego, CA, United States
PA Nanogen, Inc., San Diego, CA, United States (U.S. corporation)
PI US 6518022 B1 20030211
AI US 1999-444539 19991122 (9)
RLI Continuation of Ser. No. US 1997-986065, filed on 5 Dec 1997, now patented, Pat. No. US 6051380 Continuation-in-part of Ser. No. US 1995-534454, filed on 27 Sep 1995, now patented, Pat. No. US 5849486 Continuation-in-part of Ser. No. US 1994-304657, filed on 9 Sep 1994, now patented, Pat. No. US 5632957 Continuation-in-part of Ser. No. US 1994-271882, filed on 7 Jul 1994, now patented, Pat. No. US 6017696 Continuation-in-part of Ser. No. US 1993-146504, filed on 1 Nov 1993, now patented, Pat. No. US 5605662 Continuation-in-part of Ser. No. US 1996-708262, filed on 6 Sep 1996, now abandoned
DT Utility
FS GRANTED
EXNAM Primary Examiner: Marschel, Ardin H.
LREP Lyon & Lyon LLP
CLMN Number of Claims: 9
ECL Exemplary Claim: 1
DRWN 47 Drawing Figure(s); 26 Drawing Page(s)
LN.CNT 4305
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A self-addressable, self-assembling microelectronic device is designed and fabricated to actively carry out and control multi-step and multiplex molecular biological reactions in microscopic formats. These reactions include nucleic acid hybridizations, antibody/antigen reactions, diagnostics, and biopolymer synthesis. The device can be fabricated using both microlithographic and micro-machining techniques.

The device can electronically control the transport and attachment of specific binding entities to specific microlocations. The specific binding entities include molecular biological molecules such as nucleic acids and polypeptides. The device can subsequently control the transport and reaction of analytes or reactants at the addressed specific microlocations. The device is able to concentrate analytes and reactants, remove non-specifically bound molecules, provide stringency control for DNA **hybridization** reactions, and improve the detection of analytes. The device can be electronically replicated.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 19 OF 64 USPATFULL
AN 2003:30222 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Park, So-Jung, Evanston, IL, UNITED STATES
PI US 2003022169 A1 20030130
AI US 2001-820279 A1 20010328 (9)
RLI Continuation-in-part of Ser. No. US 2001-760500, filed on 12 Jan 2001, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-176409P 20000113 (60)
US 2000-200161P 20000426 (60)
US 2000-192699P 20000328 (60)
US 2000-254392P 20001208 (60)
US 2000-255235P 20001211 (60)
DT Utility
FS APPLICATION
LREP MCDONNELL BOEHNEN HULBERT & BERGHOFF, 300 SOUTH WACKER DRIVE, SUITE 3200, CHICAGO, IL, 60606
CLMN Number of Claims: 570
ECL Exemplary Claim: 1
DRWN 65 Drawing Page(s)
LN.CNT 11127
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.F

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 20 OF 64 USPATFULL
AN 2003:21602 USPATFULL
TI Dielectrically-engineered microparticles
IN Becker, Frederick F., Houston, TX, UNITED STATES

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Gascoyne, Peter R.C., Bellaire, TX, UNITED STATES
Vykoukal, Jody, Houston, TX, UNITED STATES
Wang, Xiaobo, San Diego, CA, UNITED STATES
PI US 2003015428 A1 20030123
AI US 2001-883112 A1 20010614 (9)
PRAI US 2000-211515P 20000614 (60)
DT Utility
FS APPLICATION
LREP FULBRIGHT & JAWORSKI L.L.P., 600 CONGRESS AVENUE, SUITE 2400, AUSTIN, TX, 78701
CLMN Number of Claims: 35
ECL Exemplary Claim: 1
DRWN 22 Drawing Page(s)
LN.CNT 2415
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB An engineered microparticle and methods and systems relating thereto. The microparticle includes a conductive core and an insulating layer surrounding the conductive core and having a thickness sufficient to render the microparticle responsive to a dielectrophoretic force.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 21 OF 64 USPATFULL
AN 2003:13189 USPATFULL
TI **Nanoparticles** having **oligonucleotides** attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, United States
Letsinger, Robert L., Wilmette, IL, United States
Mucic, Robert C., Glendale, CA, United States
Storhoff, James J., Evanston, IL, United States
Elghanian, Robert, Chicago, IL, United States
Taton, Thomas A., Chicago, IL, United States
PA Nanosphere, Inc., Northbrook, IL, United States (U.S. corporation)
PI US 6506564 B1 20030114
AI US 2000-603830 20000626 (9)
RLI Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999
Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999
Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997
PRAI US 2000-200161P 20000426 (60)
US 1996-31809P 19960729 (60)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Riley, Jezia
LREP McDonnell Boehnen Hulbert & Berghoff
CLMN Number of Claims: 42
ECL Exemplary Claim: 1
DRWN 84 Drawing Figure(s); 47 Drawing Page(s)
LN.CNT 5976
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having **oligonucleotides** attached thereto. In one embodiment of the method, the **oligonucleotides** are attached to **nanoparticles** and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the **hybridization** of the **oligonucleotides** on the **nanoparticles** to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique **nanoparticle-oligonucleotide** conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides

nanomaterials and **nanostructures** comprising **nanoparticles** and methods of nanofabrication utilizing **nanoparticles**. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 22 OF 64 USPATFULL
AN 2003:8472 USPATFULL
TI Directed assembly of functional heterostructures
IN Banerjee, Sukanta, North Brunswick, NJ, UNITED STATES
Podual, Kairali, North Brunswick, NJ, UNITED STATES
Seul, Michael, Fanwood, NJ, UNITED STATES
PI US 2003006143 A1 20030109
AI US 2001-34727 A1 20011226 (10)
PRAI US 2001-300025P 20010621 (60)
DT Utility
FS APPLICATION
LREP Kenneth H. Sonnenfeld, Morgan & Finnegan, L. L. P., 345 Park Avenue, New York, NY, 10154
CLMN Number of Claims: 82
ECL Exemplary Claim: 1
DRWN 20 Drawing Page(s)
LN.CNT 1663
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to a systematic process for the creation of functionally organized, spatially patterned assemblies polymer-microparticle composites including the AC electric field-mediated assembly of patterned, self **supporting** organic (polymeric) films and organic (polymeric)--microparticle composite films of tailored composition and morphology; the present invention further relates to the incorporation of said assemblies into other structures. The present invention. also relates to the application of such functional assemblies in materials science and biology. Additional areas of application include sensors, catalysts, membranes, micro-reactors, smart materials. Miniaturized format for generation of multifunctional thin films. Provides a simple set-up to synthesize thin films of tailored composition and morphology:

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 23 OF 64 USPATFULL
AN 2002:343731 USPATFULL
TI Integrated electro-luminescent biochip
IN Pope, Edward J. A., Agoura, CA, UNITED STATES
PI US 2002197456 A1 20021226
AI US 2001-965683 A1 20010927 (9)
RLI Continuation-in-part of Ser. No. US 1993-112398, filed on 26 Aug 1993, ABANDONED Continuation-in-part of Ser. No. US 1995-560380, filed on 17 Nov 1995, GRANTED, Pat. No. US 5757124 Division of Ser. No. US 1993-84876, filed on 30 Jun 1993, GRANTED, Pat. No. US 5480582
DT Utility
FS APPLICATION
LREP W. Edward Johansen, 11661 San Vicente Boulevard, Los Angeles, CA, 90049
CLMN Number of Claims: 32
ECL Exemplary Claim: 1
DRWN 12 Drawing Page(s)
LN.CNT 2073
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A biochip includes a plurality of sensors. Each sensor contains one or more light sources and one or more optical detectors.

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CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 24 OF 64 USPATFULL
AN 2002:329821 USPATFULL
TI Microdevices having a preferential axis of magnetization and uses thereof
IN Huang, Mingxian, San Diego, CA, UNITED STATES
Wu, Lei, San Diego, CA, UNITED STATES
Wang, Xiaobo, San Diego, CA, UNITED STATES
Xu, Junquan, San Diego, CA, UNITED STATES
Tao, Guo Liang, San Diego, CA, UNITED STATES
Rothwarf, David M., La Jolla, CA, UNITED STATES
PI US 2002187501 A1 20021212
AI US 2002-104571 A1 20020321 (10)
RLI Continuation-in-part of Ser. No. US 2001-924428, filed on 7 Aug 2001, PENDING
PRAI CN 2001-104318 20010228
US 2001-264458P 20010126 (60)
DT Utility
FS APPLICATION
LREP Peng Chen, Morrison & Foerster LLP, Suite 500, 3811 Valley Centre Drive, San Diego, CA, 92130-2332
CLMN Number of Claims: 93
ECL Exemplary Claim: 1
DRWN 8 Drawing Page(s)
LN.CNT 3116
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB This invention relates generally to the field of moiety or molecule isolation, detection and manipulation and library synthesis. In particular, the invention provides a microdevice, which microdevice comprises: a) a magnetizable substance; and b) a photorecognizable coding pattern, wherein said microdevice has a preferential axis of magnetization. Systems and methods for isolating, detecting and manipulating moieties and synthesizing libraries using the microdevices are also provided.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 25 OF 64 USPATFULL
AN 2002:322463 USPATFULL
TI Biochips including ion transport detecting strucutres and methods of use
IN Wang, Xiaobo, San Diego, CA, UNITED STATES
Wu, Lei, San Diego, CA, UNITED STATES
Xu, Jun Quan, Beijing, CHINA
Huang, Ming Xiang, San Diego, CA, UNITED STATES
Yang, Weiping, San Diego, CA, UNITED STATES
Cheng, Jing, Beijing, CHINA
Xu, Jia, San Diego, CA, UNITED STATES
PI US 2002182627 A1 20021205
AI US 2002-104300 A1 20020322 (10)
PRAI US 2001-311327P 20010810 (60)
US 2001-278308P 20010324 (60)
DT Utility
FS APPLICATION
LREP DAVID R PRESTON & ASSOCIATES, 12625 HIGH BLUFF DRIVE, SUITE 205, SAN DIEGO, CA, 92130
CLMN Number of Claims: 59
ECL Exemplary Claim: 1
DRWN 24 Drawing Page(s)
LN.CNT 5459
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention recognizes that the determination of ion transport

function or property using direct detection methods, such as patch-clamps, whole cell recording or single channel recording, are preferable to methods that utilize indirect detection methods, such as FRET based detection system. The present invention provides biochips and methods of use that allow for the direct analysis of ion transport function or property using microfabricated structures that can allow for automated detection of ion transport function or property. These biochips and methods of use thereof are particularly appropriate for automating the detection of ion transport function or property, particularly for screening purposes.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 26 OF 64 USPATFULL
AN 2002:322449 USPATFULL
TI **Nanoparticles** having **oligonucleotides** attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas A., Little Canada, MN, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2002182613 A1 20021205
AI US 2001-976971 A1 20011012 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility
FS APPLICATION
LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S. Wacker Drive, Chicago, IL, 60606
CLMN Number of Claims: 172
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 6563
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having **oligonucleotides** attached thereto. In one embodiment of the method, the **oligonucleotides** are attached to **nanoparticles** and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the **hybridization** of the **oligonucleotides** on the **nanoparticles** to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides **nanomaterials** and **nanostructures** comprising **nanoparticles** and methods of nanofabrication utilizing the **nanoparticles**. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 27 OF 64 USPATFULL
AN 2002:322447 USPATFULL
TI **Nanoparticles** having **oligonucleotides** attached

thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas A., Little Canada, MN, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2002182611 A1 20021205
AI US 2001-966491 A1 20010928 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility
FS APPLICATION
LREP MCDONNELL BOEHNEN HULBERT & BERGHOFF, 300 SOUTH WACKER DRIVE, SUITE 3200, CHICAGO, IL, 60606
CLMN Number of Claims: 190
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 6646
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having **oligonucleotides** attached thereto. In one embodiment of the method, the **oligonucleotides** are attached to **nanoparticles** and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the **hybridization** of the **oligonucleotides** on the **nanoparticles** to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides **nanomaterials** and **nanostructures** comprising **nanoparticles** and methods of nanofabrication utilizing the **nanoparticles**. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 28 OF 64 USPATFULL
AN 2002:315206 USPATFULL
TI Nucleic acid probes and methods
IN Grinstaff, Mark W., Durham, NC, UNITED STATES
Beilstein, Amy E., Durham, NC, UNITED STATES
Khan, Shoeb I., Durham, NC, UNITED STATES
PA Duke University (U.S. corporation)
PI US 2002177695 A1 20021128
AI US 2001-941986 A1 20010830 (9)
RLI Continuation of Ser. No. US 1999-377612, filed on 19 Aug 1999, PATENTED
PRAI US 1998-97327P 19980820 (60)
DT Utility
FS APPLICATION
LREP NIXON & VANDERHYE P.C., 8th Floor, 1100 North Glebe Road, Arlington, VA, 22201-4714
CLMN Number of Claims: 40
ECL Exemplary Claim: 1
DRWN 22 Drawing Page(s)
LN.CNT 2022

09567863

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention provides metal-containing purines, pyrimidines, nucleosides, nucleotides and **oligonucleotides**; including phosphoramidite and photolabile derivatives thereof, including methods of making and method of using same. The present invention provides a method for detection of nucleic acid sequences via electrochemical or photochemical means.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 29 OF 64 USPATFULL
AN 2002:307840 USPATFULL
TI DNA-bridged carbon nanotube arrays
IN Kelley, Shana O., Boston, MA, UNITED STATES
Fourkas, John, Chestnut Hill, MA, UNITED STATES
Naughton, Michael, Norwood, MA, UNITED STATES
Ren, Zhifeng, Newton, MA, UNITED STATES
PI US 2002172963 A1 20021121
AI US 2002-42911 A1 20020109 (10)
PRAI US 2001-260758P 20010110 (60)
DT Utility
FS APPLICATION
LREP PALMER & DODGE, LLP, PAULA CAMPBELL EVANS, 111 HUNTINGTON AVENUE, BOSTON, MA, 02199
CLMN Number of Claims: 59
ECL Exemplary Claim: 1
DRWN 16 Drawing Page(s)
LN.CNT 1170
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A class of biological sensing devices that include a **substrate** comprising an array of carbon nanotubes (CNTs) to which are chemically attached biological molecules is disclosed. The attached biological molecules are capable of electrical **conductivity** that is responsive to chemical changes occurring as a result of their interaction with **target** species. A means for means for using DNA as a material of potential in molecular electronic sensor devices, being primarily based on molecular electron-transfer reaction processes between DNA-binding donors and acceptors is also disclosed, including composition, method of manufacture and their use are described.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 30 OF 64 USPATFULL
AN 2002:307830 USPATFULL
TI Movement of biomolecule-coated nanoparticles in an electric field
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Chicago, IL, UNITED STATES
Taton, Thomas Andrew, Chicago, IL, UNITED STATES
Garimella, Viswanadham, Evanston, IL, UNITED STATES
Li, Zhi, Evanston, IL, UNITED STATES
Park, So-Jung, Evanston, IL, UNITED STATES
PI US 2002172953 A1 20021121
AI US 2001-927777 A1 20010810 (9)
RLI Continuation-in-part of Ser. No. US 2001-820279, filed on 28 Mar 2001, PENDING Continuation-in-part of Ser. No. US 2001-760500, filed on 12 Jan 2001, PENDING Continuation-in-part of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED

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Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN

PRAI US 1996-31809P 19960729 (60)
US 2000-176409P 20000113 (60)
US 2000-200161P 20000426 (60)
US 2000-192699P 20000328 (60)
US 2000-254392P 20001208 (60)
US 2000-255235P 20001211 (60)
US 2000-224631P 20000811 (60)

DT Utility
FS APPLICATION
LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S. Wacker Drive, Chicago, IL, 60606
CLMN Number of Claims: 598
ECL Exemplary Claim: 1
DRWN 64 Drawing Page(s)
LN.CNT 11435
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 31 OF 64 USPATFULL
AN 2002:294568 USPATFULL
TI **Oligonucleotide** identifiers
IN Bamdad, R. Shoshana, New York, NY, UNITED STATES
Bamdad, Cynthia C., Newton, MA, UNITED STATES
PI US 2002164611 A1 20021107
AI US 2001-4275 A1 20011115 (10)
PRAI GB 2001-1054 20010115
US 2000-248863P 20001115 (60)
US 2000-252650P 20001122 (60)
US 2001-276995P 20010319 (60)
US 2001-302231P 20010629 (60)
US 2001-326937P 20011003 (60)
US 2001-327089P 20011003 (60)
DT Utility
FS APPLICATION
LREP WOLF GREENFIELD & SACKS, PC, FEDERAL RESERVE PLAZA, 600 ATLANTIC AVENUE, BOSTON, MA, 02210-2211
CLMN Number of Claims: 118
ECL Exemplary Claim: 1
DRWN 11 Drawing Page(s)
LN.CNT 2312
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Methods, assays, and components are described in which biological samples can be rapidly and sensitively analyzed for the presence of species associated with neurodegenerative disease. Techniques and

components are provided for diagnosis of disease, as well as for screening of candidate drugs for treatment of neurodegenerative disease. The techniques are simple, extremely sensitive, and utilize readily-available components. Binding species, capable of binding a neurodegenerative disease aggregate-forming or aggregate-forming species, are fastened to **surfaces** of **electrodes** and **surfaces** of particles, or provided free in solution, to bind aggregate-forming species and/or be involved in aggregation.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 32 OF 64 USPATFULL
AN 2002:294562 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Chicago, IL, UNITED STATES
Taton, Thomas A., Chicago, IL, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2002164605 A1 20021107
AI US 2001-966312 A1 20010928 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility
FS APPLICATION
LREP MCDONNELL BOEHNEN HULBERT & BERGHOFF, 300 SOUTH WACKER DRIVE, SUITE 3200, CHICAGO, IL, 60606
CLMN Number of Claims: 431
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 8066
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 33 OF 64 USPATFULL
AN 2002:287518 USPATFULL
TI **Nanoparticles** having **oligonucleotides** attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES

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Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas Andrew, Little Canada, MN, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2002160381 A1 20021031
AI US 2001-975498 A1 20011011 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, PENDING Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility
FS APPLICATION
LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S. Wacker Drive, Chicago, IL, 60606
CLMN Number of Claims: 431
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 5695
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having **oligonucleotides** attached thereto. In one embodiment of the method, the **oligonucleotides** are attached to **nanoparticles** and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the **hybridization** of the **oligonucleotides** on the **nanoparticles** to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique **nanoparticle-oligonucleotide** conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides **nanomaterials** and **nanostructures** comprising **nanoparticles** and methods of nanofabrication utilizing **nanoparticles**. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 34 OF 64 USPATFULL
AN 2002:280028 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas Andrew, Little Canada, MN, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2002155462 A1 20021024
AI US 2001-976577 A1 20011012 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)

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US 2000-200161P 20000426 (60)
DT Utility
FS APPLICATION
LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S. Wacker Drive, Chicago, IL, 60606
CLMN Number of Claims: 431
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 8047
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 35 OF 64 USPATFULL
AN 2002:280027 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas Andrew, Little Canada, MN, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2002155461 A1 20021024
AI US 2001-976378 A1 20011012 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility
FS APPLICATION
LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S. Wacker Drive, Chicago, IL, 60606
CLMN Number of Claims: 431
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 8052
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a

result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 36 OF 64 USPATFULL
AN 2002:280025 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas A., Little Canada, MN, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2002155459 A1 20021024
AI US 2001-975062 A1 20011011 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility
FS APPLICATION
LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S. Wacker Drive, Chicago, IL, 60606
CLMN Number of Claims: 431
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 8059
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 37 OF 64 USPATFULL
AN 2002:280024 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES

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Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas A., Little Canada, MN, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2002155458 A1 20021024
AI US 2001-967409 A1 20010928 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility
FS APPLICATION
LREP MCDONNELL BOEHNEN HULBERT & BERGHOFF, 300 SOUTH WACKER DRIVE, SUITE 3200, CHICAGO, IL, 60606
CLMN Number of Claims: 431
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 8059
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 38 OF 64 USPATFULL
AN 2002:280008 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Chicago, IL, UNITED STATES
Taton, Thomas A., Little Canada, MN, UNITED STATES
Garimella, Viswanadham, Evanston, IL, UNITED STATES
Li, Zhi, Evanston, IL, UNITED STATES
PI US 2002155442 A1 20021024
AI US 2001-760500 A1 20010112 (9)
RLI Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
US 2000-176409P 20000113 (60)

09567863

US 2000-213906P 20000626 (60)
DT Utility
FS APPLICATION
LREP MCDONNELL BOEHNEN HULBERT & BERGHOFF, 300 SOUTH WACKER DRIVE, SUITE 3200, CHICAGO, IL, 60606
CLMN Number of Claims: 485
ECL Exemplary Claim: 1
DRWN 51 Drawing Page(s)
LN.CNT 8754
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 39 OF 64 USPATFULL
AN 2002:265844 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas A., Little Canada, MN, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2002146720 A1 20021010
AI US 2001-961949 A1 20010920 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility
FS APPLICATION
LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S. Wacker Drive, Chicago, IL, 60606
CLMN Number of Claims: 431
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 8063
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a

result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 40 OF 64 USPATFULL
AN 2002:251128 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas A., Little Canada, MN, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2002137072 A1 20020926
AI US 2001-976617 A1 20011012 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility
FS APPLICATION
LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S. Wacker Drive, Chicago, IL, 60606
CLMN Number of Claims: 431
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 8061
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 41 OF 64 USPATFULL
AN 2002:251127 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES

09567863

Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas A., Little Canada, MN, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2002137071 A1 20020926
AI US 2001-974007 A1 20011010 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility
FS APPLICATION
LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S. Wacker Drive, Chicago, IL, 60606
CLMN Number of Claims: 431
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 8063
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 42 OF 64 USPATFULL
AN 2002:251126 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas A., Little Canada, MN, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2002137070 A1 20020926
AI US 2001-973638 A1 20011010 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility

09567863

FS APPLICATION
LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S. Wacker Drive, Chicago, IL, 60606
CLMN Number of Claims: 431
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 8060
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 43 OF 64 USPATFULL
AN 2002:251115 USPATFULL
TI Microdevice containing photorecognizable coding patterns and methods of using and producing the same thereof
IN Wu, Lei, San Diego, CA, UNITED STATES
Wang, Xiaobo, San Diego, CA, UNITED STATES
Tao, Gouliang, San Diego, CA, UNITED STATES
Xu, Junquan, San Diego, CA, UNITED STATES
Cheng, Jing, Beijing, CHINA
Huang, Mingxiang, San Diego, CA, UNITED STATES
Sun, Baoquan, Shangdong, CHINA
Shao, Wei, Nanjing, CHINA
Liu, Litian, Beijing, CHINA
Chen, Depu, Beijing, CHINA
Rothwarf, David M., La Jolla, CA, UNITED STATES
Yang, Weiping, San Diego, CA, UNITED STATES
PI US 2002137059 A1 20020926
AI US 2001-924428 A1 20010807 (9)
PRAI CN 2001-104318 20010228
US 2001-264458P 20010126 (60)
DT Utility
FS APPLICATION
LREP MORRISON & FOERSTER LLP, 3811 VALLEY CENTRE DRIVE, SUITE 500, SAN DIEGO, CA, 92130-2332
CLMN Number of Claims: 114
ECL Exemplary Claim: 1
DRWN 11 Drawing Page(s)
LN.CNT 3746
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB This invention relates generally to the field of moiety or molecule analysis, isolation, detection and manipulation and library synthesis. In particular, the invention provides a microdevice, which microdevice comprises: a) a **substrate**; and b) a photorecognizable coding pattern on said **substrate**. Preferably, the microdevice does not comprise an anodized metal **surface** layer. Methods and kits for isolating, detecting and manipulating moieties, and synthesizing

libraries using the microdevices are also provided. The invention further provides two-dimensional optical encoders and uses thereof.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 44 OF 64 USPATFULL
AN 2002:235385 USPATFULL
TI Nanoparticles having oligonucleotides attached thereto and uses therefor
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES
Letsinger, Robert L., Wilmette, IL, UNITED STATES
Mucic, Robert C., Glendale, CA, UNITED STATES
Storhoff, James J., Evanston, IL, UNITED STATES
Elghanian, Robert, Skokie, IL, UNITED STATES
Taton, Thomas A., Little Canada, MN, UNITED STATES
PA Nanosphere, Inc. (U.S. corporation)
PI US 2002127574 A1 20020912
AI US 2001-973788 A1 20011010 (9)
RLI Continuation of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN
PRAI US 1996-31809P 19960729 (60)
US 2000-200161P 20000426 (60)
DT Utility
FS APPLICATION
LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S. Wacker Drive, Chicago, IL, 60606
CLMN Number of Claims: 431
ECL Exemplary Claim: 1
DRWN 46 Drawing Page(s)
LN.CNT 8060
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 45 OF 64 USPATFULL
AN 2002:185614 USPATFULL
TI Electronic detection of interaction and detection of interaction based on the interruption of flow
IN Bamdad, Cynthia C., Newton, MA, UNITED STATES
PI US 2002098526 A1 20020725
AI US 2001-971056 A1 20011003 (9)
PRAI US 2000-237427P 20001003 (60)
US 2001-272727P 20010301 (60)
DT Utility
FS APPLICATION

09567863

LREP WOLF GREENFIELD & SACKS, PC, FEDERAL RESERVE PLAZA, 600 ATLANTIC AVENUE, BOSTON, MA, 02210-2211
CLMN Number of Claims: 80
ECL Exemplary Claim: 1
DRWN 19 Drawing Page(s)
LN.CNT 1886
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Porous members can be positioned so as to partially or fully span channels in microfluidic systems. The porous members can be assembled and/or disassembled in situ. The porous members can be made such that pores are separated by connections including but a single molecule at one location, allowing for a high level of open area in a very small pore size member. The porous member can be made up of colloid particles interconnected with molecular species. These can be used to detect analytes qualitatively and/or quantitatively, or to selectively bind and/or release agents on command for a variety of purposes including first blocking, then opening a channel, concentrating analyte over time followed by release of analyte and detection downstream, etc. Porous members can define valves in multiple-channel systems and, with controlled binding and release of agents at the porous members, these valves can be opened and closed and fluid flow controlled in a multi-channel system. Fluidic systems of the invention can include multiple sensing locations at which different analytes are determined. Systems of the invention provide flexibility for overall microchemical analysis, sequentially, of a variety of agents.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 46 OF 64 USPATFULL
AN 2002:178745 USPATFULL
TI Apparatus for assay, synthesis and storage, and methods of manufacture, use, and manipulation thereof
IN Hess, Robert A., Arlington, MA, UNITED STATES
Linton, John, Lincoln, MA, UNITED STATES
Kanigan, Tanya S., Cambridge, MA, UNITED STATES
Brenan, Colin, Marbelbead, MA, UNITED STATES
Ozbal, Can, Cambridge, MA, UNITED STATES
PI US 2002094533 A1 20020718
AI US 2001-975496 A1 20011010 (9)
PRAI US 2000-239538P 20001010 (60)
US 2001-268894P 20010214 (60)
US 2001-284710P 20010418 (60)
DT Utility
FS APPLICATION
LREP JOHN W. FREEMAN, ESQ., Fish & Richardson P.C., 225 Franklin Street, Boston, MA, 02110-2804
CLMN Number of Claims: 72
ECL Exemplary Claim: 1
DRWN 24 Drawing Page(s)
LN.CNT 4310
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention features methods of making devices, or "platens", having a high-density array of through-holes, as well as methods of cleaning and refurbishing the **surfaces** of the platens. The invention further features methods of making high-density arrays of chemical, biochemical, and biological compounds, having many advantages over conventional, lower-density arrays. The invention includes methods by which many physical, chemical or biological transformations can be implemented in serial or in parallel within each addressable through-hole of the devices. Additionally, the invention includes methods of analyzing the contents of the array, including assaying of physical properties of the samples.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 47 OF 64 USPATFULL
AN 2002:178738 USPATFULL
TI Biosensor compositions and methods of use
IN Bayley, Hagan P., College Station, TX, UNITED STATES
Howorka, Stefan G., College Station, TX, UNITED STATES
Movileanu, Liviu, Bryan, TX, UNITED STATES
PI US 2002094526 A1 20020718
AI US 2001-781697 A1 20010212 (9)
PRAI US 2000-182097P 20000211 (60)
DT Utility
FS APPLICATION
LREP Shelley P.M. Fussey, Williams, Morgan & Amerson, P.C., Suite 250, 7676 Hillmont, Houston, TX, 77040
CLMN Number of Claims: 43
ECL Exemplary Claim: 1
DRWN 11 Drawing Page(s)
LN.CNT 2765
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Provided are pore-subunit polypeptides covalently linked to one or more sensing moieties, and uses of these modified polypeptides to detect and/or measure analytes or physical characteristics within a given sample.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 48 OF 64 USPATFULL
AN 2002:171900 USPATFULL
TI High density column and row addressable **electrode** arrays
IN Chan, Tony, Scottsdale, AZ, UNITED STATES
Choong, Vi-En, Chandler, AZ, UNITED STATES
Li, Changming, Phoenix, AZ, UNITED STATES
Maracas, George Nicolas, Phoenix, AZ, UNITED STATES
Nagahara, Larry Akio, Phoenix, AZ, UNITED STATES
Shi, Song, Phoenix, AZ, UNITED STATES
PI US 2002090649 A1 20020711
AI US 2001-945154 A1 20010831 (9)
RLI Continuation of Ser. No. US 2000-652284, filed on 31 Aug 2000, PENDING
Continuation of Ser. No. US 1999-464500, filed on 15 Dec 1999, PENDING
PRAI US 2001-299780P 20010620 (60)
DT Utility
FS APPLICATION
LREP FLEHR HOHBACH TEST ALBRITTON & HERBERT LLP, Suite 3400, Four Embarcadero Center, San Francisco, CA, 94111-4187
CLMN Number of Claims: 15
ECL Exemplary Claim: 1
DRWN 11 Drawing Page(s)
LN.CNT 2010
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB This invention relates to the detection of biomolecules. Specifically, the invention relates to electronic or electrochemical detection of biomolecules using biochip arrays. In particular, the invention provides an apparatus comprising a platform for a column-and-row addressable, high-density, enhanced-sensitivity biochip array, and methods of use thereof. The devices and methods of the invention can be used to detect molecular interactions such as nucleic acid **hybridization** or protein binding.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

09567863

L6 ANSWER 49 OF 64 USPATFULL
AN 2002:122274 USPATFULL
TI Matrices for drug delivery and methods for making and using the same
IN Babich, John W., Scituate, MA, United States
Zubieta, Jon, Syracuse, NY, United States
Bonavia, Grant, Kensington, MD, United States
PA Biostream, Inc., Cambridge, MA, United States (U.S. corporation)
PI US 6395299 B1 20020528
AI US 2000-503438 20000214 (9)
PRAI US 1999-119828P 19990212 (60)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Patterson, Jr., Charles L.
LREP Foley, Hoag & Eliot, LLP
CLMN Number of Claims: 140
ECL Exemplary Claim: 1
DRWN 13 Drawing Figure(s); 13 Drawing Page(s)
LN.CNT 4531
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB In one aspect, biocompatible matrices such as sol-gels encapsulating a reaction center may be administered to a subject for conversion of prodrugs into biologically active agents. In certain embodiments, the biocompatible matrices of the present invention are sol-gels. In one embodiment, the enzyme L-amino acid decarboxylase is encapsulated and implanted in the brain to convert L-dopa to dopamine for treatment of Parkinson's disease.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 50 OF 64 USPATFULL
AN 2002:60923 USPATFULL
TI Single-molecule selection methods and compositions therefrom
IN Cubicciotti, Roger S., Montclair, NJ, UNITED STATES
PI US 2002034757 A1 20020321
AI US 2001-907385 A1 20010717 (9)
RLI Continuation of Ser. No. US 1998-81930, filed on 20 May 1998, GRANTED, Pat. No. US 6287765
DT Utility
FS APPLICATION
LREP LICATA & TYRRELL P.C., 66 E. MAIN STREET, MARLTON, NJ, 08053
CLMN Number of Claims: 129
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 15716
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Single-molecule selection methods are provided for identifying **target**-binding molecules from diverse sequence and shape libraries. Complexes and imprints of selected **target**-binding molecules are also provided. The subject selection methods are used to identify **oligonucleotide** and nonnucleotide molecules with desirable properties for use in pharmaceuticals, drug discovery, drug delivery, diagnostics, medical devices, cosmetics, agriculture, environmental remediation, smart materials, packaging, microelectronics and nanofabrication. Single **oligonucleotide** molecules with desirable binding properties are selected from diverse sequence libraries and identified by amplification and sequencing. Alternatively, selected **oligonucleotide** molecules are identified by sequencing without amplification. Nonnucleotide molecules with desirable properties are identified by single-molecule selection from libraries of conjugated molecules or nucleotide-encoded nonnucleotide molecules. Alternatively, **target**-specific nonnucleotide molecules are prepared by imprinting selected **oligonucleotide** molecules into

nonnucleotide molecular media. Complexes and imprints of molecules identified by single-molecule selection are shown to have broad utility as drugs, prodrugs, drug delivery systems, willfully reversible cosmetics, diagnostic reagents, sensors, transducers, actuators, adhesives, adherents and novel multimolecular devices.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 51 OF 64 USPATFULL
AN 2001:212120 USPATFULL
TI Chemically assembled nano-scale circuit elements
IN Connolly, Dennis Michael, Rochester, NY, United States
PA Integrated Nano-Technologies, LLC. (U.S. corporation)
PI US 2001044114 A1 20011122
AI US 2001-860046 A1 20010517 (9)
RLI Continuation-in-part of Ser. No. US 1999-315750, filed on 20 May 1999, GRANTED, Pat. No. US 6248529
PRAI US 1998-86163P 19980520 (60)
US 1998-95096P 19980803 (60)
DT Utility
FS APPLICATION
LREP Gunnar G. Leinberg, NIXON PEABODY LLP, Clinton Square, P.O. Box 31051, Rochester, NY, 14603
CLMN Number of Claims: 71
ECL Exemplary Claim: 1
DRWN 5 Drawing Page(s)
LN.CNT 1302
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention provides nano-scale devices, including electronic circuits, using DNA molecules as a **support** structure. DNA binding proteins are used to mask regions of the DNA as a material, such as a metal is coated onto the DNA. Included in the invention are DNA based transistors, capacitors, inductors and diodes. The present invention also provides methods of making integrated circuits using DNA molecules as a **support** structure. Methods are also included for making DNA based transistors, capacitors, inductors and diodes.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 52 OF 64 USPATFULL
AN 2001:178820 USPATFULL
TI Organic semiconductor recognition complex and system
IN Kiel, Johnathan L., Universal City, TX, United States
Bruno, John G., San Antonio, TX, United States
Parker, Jill E., Floresville, TX, United States
Alls, John L., San Antonio, TX, United States
Batishko, Charles R., Richland, WA, United States
Holwitt, Eric A., San Antonio, TX, United States
PA Conceptual Mind Works, Inc., San Antonio, TX, United States (U.S. corporation)
PI US 6303316 B1 20011016
AI US 2000-608706 20000630 (9)
PRAI US 1999-142301P 19990702 (60)
US 2000-199620P 20000425 (60)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Horlick, Kenneth R.
LREP Blakely, Sokoloff, Taylor & Zafman
CLMN Number of Claims: 62
ECL Exemplary Claim: 1
DRWN 31 Drawing Figure(s); 15 Drawing Page(s)
LN.CNT 3322

09567863

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB In a recognition complex system, nucleic acid ligands comprising random DNA sequences are operatively coupled to an organic semiconductor and distributed so as to form an array of recognition complexes. When an unknown chemical or biological analyte is applied to the array, the electrical and/or photochemical properties of one or more of the recognition complexes are altered upon binding of the nucleic acid ligand to the analyte. The degree to which the electrical and/or photochemical properties change is a function of the affinity of the nucleic acid ligand sequence for the analyte. The electrical and photochemical changes associated with the array, as a whole, can be used as a unique signature to identify the analyte. In certain embodiments, an iterative process of selection and amplification of nucleic acid ligands that bind to the analyte can be used to generate a new array with greater affinity and specificity for a **target** analyte, or to produce one or more nucleic acid ligands with high binding affinity for an analyte. The present invention also provides methods for preparing nucleic acid ligands that bind with high affinity to an analyte and using such nucleic acid ligands to neutralize the analyte.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 53 OF 64 USPATFULL
AN 2001:152673 USPATFULL
TI Methods for detecting and identifying single molecules
IN Cubicciotti, Roger S., Montclair, NJ, United States
PA Molecular Machines, Inc., Montclair, NJ, United States (U.S. corporation)
PI US 6287765 B1 20010911
AI US 1998-81930 19980520 (9)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Fredman, Jeffrey
LREP Licata & Tyrrell P.C.
CLMN Number of Claims: 27
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 15456
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Multimolecular devices and drug delivery systems prepared from synthetic heteropolymers, heteropolymeric discrete structures, multivalent heteropolymeric hybrid structures, aptameric multimolecular devices, multivalent imprints, tethered specific recognition devices, paired specific recognition devices, nonaptameric multimolecular devices and immobilized multimolecular structures are provided, including molecular adsorbents and multimolecular adherents, adhesives, transducers, switches, sensors and delivery systems. Methods for selecting single synthetic nucleotides, shape-specific probes and specifically attractive **surfaces** for use in these multimolecular devices are also provided. In addition, paired nucleotide-nonnucleotide mapping libraries for transposition of selected populations of selected nonoligonucleotide molecules into selected populations of replicatable nucleotide sequences are described.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 54 OF 64 USPATFULL
AN 2001:134400 USPATFULL
TI Methods of analyzing polymers using a spatial network of fluorophores and fluorescence resonance energy transfer
IN Gilmanshin, Rudolf, Waltham, MA, United States
Chan, Eugene Y., Boston, MA, United States

09567863

PA U.S. Genomics, Inc. (U.S. corporation)
PI US 2001014850 A1 20010816
AI US 2001-783930 A1 20010215 (9)
RLI Division of Ser. No. US 1999-374902, filed on 13 Aug 1999, PENDING
PRAI US 1998-96543P 19980813 (60)
DT Utility
FS APPLICATION
LREP PENNIE AND EDMONDS, 1155 AVENUE OF THE AMERICAS, NEW YORK, NY, 100362711
CLMN Number of Claims: 104
ECL Exemplary Claim: 1
DRWN 9 Drawing Page(s)
LN.CNT 2327
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to methods and apparatuses for analyzing molecules, particularly polymers, and molecular complexes with extended or rod-like conformations. In particular, the methods and apparatuses are used to identify repetitive information in molecules or molecular ensembles, which is interpreted using an autocorrelation function in order to determine structural information about the molecules. The methods and apparatuses of the invention are used for, inter alia, determining the sequence of a nucleic acid, determining the degree of identity of two polymers, determining the spatial separation of specific sites within a polymer, determining the length of a polymer, and determining the velocity with which a molecule penetrates a biological membrane.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 55 OF 64 USPATFULL
AN 2001:116434 USPATFULL
TI Binding acceleration techniques for the detection of analytes
IN Blackburn, Gary, Glendora, CA, United States
Creager, Stephen E., Central, SC, United States
Fraser, Scott, La Canada, CA, United States
Irvine, Bruce D., Glendora, CA, United States
Meade, Thomas J., Altadena, CA, United States
O'Connor, Stephen D., Pasadena, CA, United States
Terbrueggen, Robert H., Manhattan Beach, CA, United States
Vielmetter, Jost G., Pasadena, CA, United States
Welch, Thomas W., Pasadena, CA, United States
PA Clinical Micro Sensors, Inc., Pasadena, CA, United States (U.S. corporation)
PI US 6264825 B1 20010724
AI US 1999-338726 19990623 (9)
RLI Continuation of Ser. No. US 1998-134058, filed on 14 Aug 1998
PRAI US 1998-90389P 19980623 (60)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Tung, T.; Assistant Examiner: Noguerola, Alex
LREP Flehr Hohabch Test Albritton & Herbert LLP, Trecartin, Esq., Richard F., Silva, Esq., Robin M.
CLMN Number of Claims: 29
ECL Exemplary Claim: 1
DRWN 49 Drawing Figure(s); 22 Drawing Page(s)
LN.CNT 5644
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention relates to compositions and methods useful in the acceleration of binding of **target** analytes to capture ligands on **surfaces**. Detection proceeds through the use of an electron transfer moiety (ETM) that is associated with the **target** analyte, either directly or indirectly, to allow electronic detection of the ETM.

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CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 56 OF 64 USPATFULL
AN 2001:113541 USPATFULL
TI Methods of analyzing polymers using a spatial network of fluorophores and fluorescence resonance energy transfer
IN Gilmanshin, Rudolf, Waltham, MA, United States
Chan, Eugene Y., Boston, MA, United States
PA U.S. Genomics, Inc., Woburn, MA, United States (U.S. corporation)
PI US 6263286 B1 20010717
AI US 1999-374902 19990813 (9)
PRAI US 1998-96543P 19980813 (60)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Brusca, John S.; Assistant Examiner: Lundgren, Jeffrey S.
LREP Pennie & Edmonds LLP
CLMN Number of Claims: 67
ECL Exemplary Claim: 1
DRWN 12 Drawing Figure(s); 9 Drawing Page(s)
LN.CNT 2361
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to methods and apparatuses for analyzing molecules, particularly polymers, and molecular complexes with extended or rod-like conformations. In particular, the methods and apparatuses are used to identify repetitive information in molecules or molecular ensembles, which is interpreted using an autocorrelation function in order to determine structural information about the molecules. The methods and apparatuses of the invention are used for, inter alia, determining the sequence of a nucleic acid, determining the degree of identity of two polymers, determining the spatial separation of specific sites within a polymer, determining the length of a polymer, and determining the velocity with which a molecule penetrates a biological membrane.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 57 OF 64 USPATFULL
AN 2001:93296 USPATFULL
TI Method of chemically assembling nano-scale devices
IN Connolly, Dennis Michael, Rochester, NY, United States
PA Integrated Nano-Technologies, LLC, Rochester, NY, United States (U.S. corporation)
PI US 6248529 B1 20010619
AI US 1999-315750 19990520 (9)
PRAI US 1998-86163P 19980520 (60)
US 1998-95096P 19980803 (60)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Horlick, Kenneth R.; Assistant Examiner: Siew, Jeffrey
LREP Nixon Peabody LLP
CLMN Number of Claims: 32
ECL Exemplary Claim: 1
DRWN 4 Drawing Figure(s); 4 Drawing Page(s)
LN.CNT 1011
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention provides nano-scale devices, including electronic circuits, using DNA molecules as a **support** structure. DNA binding proteins are used to mask regions of the DNA as a material, such as a metal is coated onto the DNA. Included in the invention are DNA based transistors, capacitors, inductors and diodes. The present

invention also provides methods of making integrated circuits using DNA molecules as a **support** structure. Methods are also included for making DNA based transistors, capacitors, inductors and diodes.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 58 OF 64 USPATFULL
AN 2001:78651 USPATFULL
TI Methods for transport in molecular biological analysis and diagnostics
IN Heller, Michael J., Encinitas, CA, United States
Tu, Eugene, San Diego, CA, United States
Evans, Glen A., Plano, TX, United States
Sosnowski, Ronald G., Coronado, CA, United States
PA Nanogen, Inc., San Diego, CA, United States (U.S. corporation)
PI US 6238624 B1 20010529
AI US 1996-726278 19961004 (8)
RLI Continuation of Ser. No. US 1994-271882, filed on 7 Jul 1994, now patented, Pat. No. US 6017696 Continuation-in-part of Ser. No. US 1993-146504, filed on 1 Nov 1993, now patented, Pat. No. US 5605662, issued on 25 Feb 1997
DT Utility
FS Granted
EXNAM Primary Examiner: Marschel, Ardin H.
LREP Lyon & Lyon LLP
CLMN Number of Claims: 60
ECL Exemplary Claim: 1
DRWN 37 Drawing Figure(s); 20 Drawing Page(s)
LN.CNT 3268
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A self-addressable, self-assembling microelectronic device is designed and fabricated to actively carry out and control multi-step and multiplex molecular biological reactions in microscopic formats. These reactions include nucleic acid hybridizations, antibody/antigen reactions, diagnostics, and biopolymer synthesis. The device can be fabricated using both microlithographic and micro-machining techniques. The device can electronically control the transport and attachment of specific binding entities to specific micro-locations. The specific binding entities include molecular biological molecules such as nucleic acids and polypeptides. The device can subsequently control the transport and reaction of analytes or reactants at the addressed specific micro-locations. The device is able to concentrate analytes and reactants, remove non-specifically bound molecules, provide stringency control for DNA **hybridization** reactions, and improve the detection of analytes. The device can be electronically replicated.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 59 OF 64 USPATFULL
AN 2000:47037 USPATFULL
TI Methods and procedures for molecular biological analysis and diagnostics
IN Sosnowski, Ronald G., Coronado, CA, United States
Butler, William F., Carlsbad, CA, United States
Tu, Eugene, San Diego, CA, United States
Nerenberg, Michael I., San Diego, CA, United States
Heller, Michael J., Encinitas, CA, United States
Edman, Carl F., San Diego, CA, United States
PA Nanogen, Inc., San Diego, CA, United States (U.S. corporation)
PI US 6051380 20000418
AI US 1997-986065 19971205 (8)
RLI Continuation-in-part of Ser. No. US 1995-534454, filed on 27 Sep 1995, now patented, Pat. No. US 5849486 which is a continuation-in-part of Ser. No. US 1994-304657, filed on 9 Sep 1994, now patented, Pat. No. US

5632957 which is a continuation-in-part of Ser. No. US 1994-271882, filed on 7 Jul 1994 which is a continuation-in-part of Ser. No. US 1993-146504, filed on 1 Nov 1993, now patented, Pat. No. US 5605662 And a continuation-in-part of Ser. No. US 1996-708262, filed on 6 Sep 1996
DT Utility
FS Granted
EXNAM Primary Examiner: Marschel, Ardin H.
LREP Lyon & Lyon LLP
CLMN Number of Claims: 12
ECL Exemplary Claim: 1
DRWN 26 Drawing Figure(s); 26 Drawing Page(s)
LN.CNT 4641
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A self-addressable, self-assembling microelectronic device is designed and fabricated to actively carry out and control multi-step and multiplex molecular biological reactions in microscopic formats. These reactions include nucleic acid hybridizations, antibody/antigen reactions, diagnostics, and biopolymer synthesis. The device can be fabricated using both microlithographic and micro-machining techniques. The device can electronically control the transport and attachment of specific binding entities to specific microlocations. The specific binding entities include molecular biological molecules such as nucleic acids and polypeptides. The device can subsequently control the transport and reaction of analytes or reactants at the addressed specific microlocations. The device is able to concentrate analytes and reactants, remove non-specifically bound molecules, provide stringency control for DNA **hybridization** reactions, and improve the detection of analytes. The device can be electronically replicated.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 60 OF 64 USPATFULL
AN 2000:43930 USPATFULL
TI Methods for electronic fluorescent perturbation for analysis and electronic perturbation catalysis for synthesis
IN Heller, Michael J., Encinitas, CA, United States
Tu, Eugene, San Diego, CA, United States
Sosnowski, Ronald G., Coronado, CA, United States
O'Connell, James P., Del Mar, CA, United States
PA Nanogen, Inc., San Diego, CA, United States (U.S. corporation)
PI US 6048690 20000411
AI US 1997-855058 19970514 (8)
RLI Continuation-in-part of Ser. No. US 1995-534454, filed on 27 Sep 1995, now patented, Pat. No. US 5849486 which is a continuation-in-part of Ser. No. US 1994-304657, filed on 9 Sep 1994, now patented, Pat. No. US 5632957 which is a continuation-in-part of Ser. No. US 1994-271882, filed on 7 Jul 1994 which is a continuation-in-part of Ser. No. US 1993-146504, filed on 1 Nov 1993, now patented, Pat. No. US 5605662 And Ser. No. US 1996-703601, filed on 23 Aug 1996, now patented, Pat. No. US 5849489 which is a continuation of Ser. No. US 1994-232233, filed on 5 May 1994, now patented, Pat. No. US 5565322 which is a continuation-in-part of Ser. No. US 1991-790262, filed on 7 Nov 1991, now patented, Pat. No. US 5532129 And a continuation of Ser. No. US 1994-250951, filed on 27 May 1994 And Ser. No. US 1994-258168, filed on 25 Aug 1994, now patented, Pat. No. US 5787032
DT Utility
FS Granted
EXNAM Primary Examiner: Marschel, Ardin H.
LREP Lyon & Lyon LLP
CLMN Number of Claims: 46
ECL Exemplary Claim: 1
DRWN 22 Drawing Figure(s); 12 Drawing Page(s)

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LN.CNT 1547
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Methods for electronic perturbation of fluorescence, chemilluminescence and other emissive materials provide for molecular biological analysis. In a preferred method for **hybridization** analysis of a sample, an electronic stringency control device is used to perform the steps of: providing the sample, a first probe with a fluorescent label and a second probe with a label under **hybridization** conditions on the electronic stringency control device, forming a **hybridization** product, subjecting the **hybridization** product to an electric field force, monitoring the fluorescence from the **hybridization** product, and analyzing the fluorescent signal. The label preferably serves as a quencher for the fluorescent label. In yet another aspect of this invention, a method for achieving electronic fluorescence perturbation on an electronic stringency control device comprising the steps of: locating a first polynucleotide and a second polynucleotide adjacent the electronic stringency control device, the first polynucleotide and second polynucleotide being complementary over at least a portion of their lengths and forming a **hybridization** product, the **hybridization** product having an associated environmental sensitive emission label, subjecting the **hybridization** product and label to a varying electrophoretic force, monitoring the emission from the label, and analyzing the monitored emission to determine the electronic fluorescence perturbation effect. In yet another aspect of this invention, a method is provided for electronic perturbation catalysis of **substrate** molecules on an electronic control device containing at least one microlocation comprising the steps of: immobilizing on the microlocation an arrangement of one or more reactive groups, exposing the reactive groups to a solution containing the **substrate** molecules of interest, and applying an electronic pulsing sequence which causes charge separation between the reactive groups to produce a catalytic reaction on the **substrate** molecules.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 61 OF 64 USPATFULL
AN 2000:9686 USPATFULL
TI Methods for electronic stringency control for molecular biological analysis and diagnostics
IN Heller, Michael J., Encinitas, CA, United States
PA Nanogen, Inc., San Diego, CA, United States (U.S. corporation)
PI US 6017696 20000125
AI US 1994-271882 19940707 (8)
RLI Continuation-in-part of Ser. No. US 1993-146504, filed on 1 Nov 1993, now patented, Pat. No. US 5605662
DT Utility
FS Granted
EXNAM Primary Examiner: Marschel, Ardin H.
LREP Lyon & Lyon
CLMN Number of Claims: 46
ECL Exemplary Claim: 1
DRWN 37 Drawing Figure(s); 20 Drawing Page(s)
LN.CNT 3524
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A self-addressable, self-assembling microelectronic device is designed and fabricated to actively carry out and control multi-step and multiplex molecular biological reactions in microscopic formats. These reactions include nucleic acid hybridizations, antibody/antigen reactions, diagnostics, and biopolymer synthesis. The device can be fabricated using both microlithographic and micro-machining techniques. The device can electronically control the transport and attachment of

specific binding entities to specific micro-locations. The specific binding entities include molecular biological molecules such as nucleic acids and polypeptides. The device can subsequently control the transport and reaction of analytes or reactants at the addressed specific micro-locations. The device is able to concentrate analytes and reactants, remove non-specifically bound molecules, provide stringency control for DNA **hybridization** reactions, and improve the detection of analytes. The device can be electronically replicated.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 62 OF 64 USPATFULL
AN 1999:85559 USPATFULL
TI Methods for electronic synthesis of polymers
IN Heller, Michael J., Encinitas, CA, United States
Tu, Eugene, San Diego, CA, United States
PA Nanogen, Inc., Del Mar, CA, United States (U.S. corporation)
PI US 5929208 19990727
AI US 1996-725976 19961004 (8)
RLI Continuation of Ser. No. US 1993-146504, filed on 1 Nov 1993, now patented, Pat. No. US 5605662
DT Utility
FS Granted
EXNAM Primary Examiner: Marschel, Ardin H.
LREP Lyon & Lyon LLP
CLMN Number of Claims: 22
ECL Exemplary Claim: 1
DRWN 33 Drawing Figure(s); 16 Drawing Page(s)
LN.CNT 1942
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A self-addressable, self-assembling microelectronic device is designed and fabricated to actively carry out and control multi-step and multiplex molecular biological reactions in microscopic formats. These reactions include nucleic acid **hybridization**, antibody/antigen reaction, diagnostics, and biopolymer synthesis. The device can be fabricated using both microlithographic and micro-machining techniques. The device can electronically control the transport and attachment of specific binding entities to specific micro-locations. The specific binding entities include molecular biological molecules such as nucleic acids and polypeptides. The device can subsequently control the transport and reaction of analytes or reactants at the addressed specific micro-locations. The device is able to concentrate analytes and reactants, remove non-specifically bound molecules, provide stringency control for DNA **hybridization** reactions, and improve the detection of analytes. The device can be electronically replicated.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 63 OF 64 USPATFULL
AN 1999:78544 USPATFULL
TI **Nanoparticles** biosensor
IN Ewart, Thomas G., King City, Canada
Bogle, Gavin T., Toronto, Canada
PA N.o slashed.AB Immunoassay, Inc., Markham, Canada (non-U.S. corporation)
PI US 5922537 19990713
AI US 1996-746420 19961108 (8)
DT Utility
FS Granted
EXNAM Primary Examiner: Zitomer, Stephanie W.
LREP Fish & Richardson, P.C., P.A.
CLMN Number of Claims: 13
ECL Exemplary Claim: 1

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DRWN 18 Drawing Figure(s); 12 Drawing Page(s)
LN.CNT 1200
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Biosensor technology based on the labelling entities having particle reporters provides cost competitive readily manufactured assay devices. Sub-micron particles of uniform dimension in metals, polymers, glasses, ceramics and biological structures such as phages are used as the labelling entities. Such reporter particles greatly increase the sensitivity and accuracy, and provide a variety of assay techniques for determining analyte presence in a sample. The particles may have dielectric, paramagnetic and/or phosphorescent properties, such particles are particularly useful in a variety of competition type assays. Novel phosphor and phage particles are provided for use as unique labelling entities.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 64 OF 64 USPATFULL
AN 97:15825 USPATFULL
TI Active programmable electronic devices for molecular biological analysis and diagnostics
IN Heller, Michael J., Encinitas, CA, United States
Tu, Eugene, San Diego, CA, United States
PA Nanogen, Inc., San Diego, CA, United States (U.S. corporation)
PI US 5605662 19970225
AI US 1993-146504 19931101 (8)
DT Utility
FS Granted
EXNAM Primary Examiner: Marschel, Ardin H.
LREP Lyon & Lyon
CLMN Number of Claims: 47
ECL Exemplary Claim: 1
DRWN 33 Drawing Figure(s); 16 Drawing Page(s)
LN.CNT 1978
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A self-addressable, self-assembling microelectronic device is designed and fabricated to actively carry out and control multi-step and multiplex molecular biological reactions in microscopic formats. These reactions include nucleic acid **hybridization**, antibody/antigen reaction, diagnostics, and biopolymer synthesis. The device can be fabricated using both microlithographic and micromachining techniques. The device can electronically control the transport and attachment of specific binding entities to specific micro-locations. The specific binding entities include molecular biological molecules such as nucleic acids and polypeptides. The device can subsequently control the transport and reaction of analytes or reactants at the addressed specific microlocations. The device is able to concentrate analytes and reactants, remove non-specifically bound molecules, provide stringency control for DNA **hybridization** reactions, and improve the detection of analytes. The device can be electronically replicated.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.